

Maharashtra State Board of Vocational Examination, Mumbai 400 051

1	Name of Course	Diploma Course in Computer Science									
2	Course code	101401									
3	Max no. of Students	25 Students									
4	Duration	2 year									
5	Course Type	Full Time									
6	No. of Days per week	6 days									
7	No. of hours per day	7 Hrs									
8	Space require	Theory Class Room – 200 sqft, Lab Sub. – 400 sqft, Lab Elective – 400 sqft = Total 1000 sqft									
9	Entry qualification	S.S.C. Pass									
10	Objective of syllabus	To get Knowledge of Computer fundamentals, To Understanding the Software Programming concept, To aquire the software skills, To understand the Networking concepts									
11	Employment opportunities	To work as a Computer Operator is the offices/Schools, Networking Technician for the Computer Networking industry, Programming assistant for the software consultant/industry									
12	Teachers Qualification	1) For Vocational Subject : B.E.Computer Science/B.E. Computer Engg./ B.E. Computer Technology 2) For Non Vocational Subject : Master Degree in Concern Subject.									
13	Teaching Scheme –										
	Sr.	Subject	Subject Code	Clock Hours / Week				Total			
				Theory	Practical						
	1	English (Communication Skill)	90000001	2 Hrs	1 Hrs			3 Hrs			
	2	Elective – I	--	2 Hrs	1 Hrs			3 Hrs			
	3	Elective – II	--	2 Hrs	1 Hrs			3 Hrs			
	4	Computer Fundamentals & Applications	10140001	3 Hrs	8 Hrs			11 Hrs			
	5	Computer Programming elements	10140002	3 Hrs	8 Hrs			11 Hrs			
	6	Computer Networking	10140003	3 Hrs	8 Hrs			11 Hrs			
	Total							42 Hrs			
14	Internship	Two Month Summer Internship from 1 st May to 30 th June is Compulsory.									
15	Examination Scheme – Final Examination will be based on syllabus of both years.										
	Paper	Subject	Subject Code	Theory			Practical			Total	
				Duration	Max	Min	Duration	Max	Min	Max	Min
	1	English (Communication Skill)	90000001	3 Hrs	70	25	3 Hrs	30	15	100	40
	2	Elective – I	--	3 Hrs	70	25	3 Hrs	30	15	100	40
	3	Elective – II	--	3 Hrs	70	25	3 Hrs	30	15	100	40
	4	Computer Fundamentals & Applications	10140001	3 Hrs	100	35	3 Hrs	100	50	200	85
	5	Computer Programming elements	10140002	3 Hrs	100	35	3 Hrs	100	50	200	85
	6	Computer Networking	10140003	3 Hrs	100	35	3 Hrs	100	50	200	85
	Total									900	375
16	Teachers – Three Teachers per batch for vocational component. For English, Elective-I & II guest faculty on clock hour basis.										
17	a) For Elective I – Student can choose any one subject Code Subject Name						b) For Elective II – Student can choose any one subject Code Subject Name				
	90000011	Applied Mathematics					90000021	Applied Sciences (Physics & Chemistry)			
	90000012	Business Economics					90000022	Computer Application			
	90000013	Physical Biology (Botany & Zoology)					90000023	Business Mathematics			
	90000014	Entrepreneurship									
	90000015	Psychology									

Subject Code : 10140001

Computer Fundamentals & Applications– 1st year

Theory	Practical
Detailed Syllabus : 1.0. Introduction 1.1. Basic idea about Computer 1.2. Applications of Computer 1.3. History of Computer generation 1.4. Different phases of computer invention (Analytical Engine to Analog Computer and Digital Computer) 1.5. Computer types and their applications 1.6. Comparative table of capabilities as per the type	Detailed Syllabus 1.0. Computer basics 1. Identification of Keyboard, Printer, Monitor Scanner, Webcam, Microphone, Speaker
2.0. Computer Architecture & Organization 2.1. Concept of Computer as a System 2.2. The structural block diagram of a computer 2.3. Different blocks of a Computer and their functions 2.4. Different input devices and their uses & limitations 2.5. Different output devices giving their uses & limitations 2.6. Memory: definition, types. 2.7. Primary memory and its classification with applications 2.8. Secondary memory devices 2.9. Classification giving specifications of different secondary storage media	2.0. Practice 1. Sample collection of various type of storage devices, specifications and charts
3.0. Data representation & organization 3.1. Data/ information, file, directory 3.2. Binary number system 3.3. Conversion of binary numbers to decimal numbers 3.4. Conversion of decimal numbers to binary numbers 3.5. Binary arithmetic (Binary addition, subtraction) 3.6. Introduction to different number system (Octal and Hexadecimal) 3.7. Data representation using Binary codes, ASCII codes 3.8. Bit, Byte.....	1. Conversion of binary to decimal 2. Conversion of binary to hexadecimal 3. Conversion of binary to octal

Computer fundamentals & Applications– 2nd year

Theory	Practical
Detailed Syllabus : 1.0. Introduction to Softwares 1.1. Basic idea about Softwares 1.2. Types/ Classification of Softwares 1.3. Functions of System Softwares 1.4. Use of Application Softwares 1.5. Applications of Programming Softwares	Detailed Syllabus 1.Study of application software 2.Study of System software
4.0. Computer Hardware & Software 4.1. Definition of Hardware & Software 4.2. Functions of hardware devices 4.3. Types Softwares and their applications 4.4. Introduction to Operating system 4.5. Study of MS DOS environment and DOS commands 4.6. Study of MS Windows environment & Windows default icons 4.7. Windows explorer 4.8. Creating files & folders in Windows O.S. 4.9. Introduction to Unix	1. Study of various dos command 2. Study of various type of printers 3. Study of dos, windows, windows xp. 4. Creation of directory, folders, files
2.0. Windows Accessories 2.1. Study of different features of Windows Accessories 2.2. Note Pad 2.3. Paint Brush 2.4. Word Pad	2.0. Practice 2.1 Create any document in notepad 2.2 Draw different shapes in paint
3.0. Software Installation 3.1. Installation procedure of different Softwares 3.2. Installation of Antivirus Softwares 3.3. Installation of Windows Operating System	1.Installation of antivirus 2.Installation of Windows xp
4.0. Installation of Hardware devices 4.1. Installation of Drivers 4.2. Installation of Printer 4.3. Installation of NIC 4.4. Installation of Modem 4.5. Running Setup programs	4.0. 1.Installation of printer 2. Installation of NIC card 3. Installation of Modem

Reference Books:

1. Computer fundamentals by P K Sinha
2. PC Software For Windows 98 Made Simple by Taxali
3. MS DOS Operating system user manual
4. Windows Operating system user manual

Subject Code : 10140002

Computer Programming Elements – 1st year

Theory	Practical
1.0. Computer Languages 1.1. General Introduction 1.2. Computer Languages 1.2.1. Definition of a Program 1.2.1. Data, Instruction/command 1.2.2. Source codes, Object codes 1.2.3. Machine code languages 1.2.4. Assembly code languages 1.2.5. High level languages 1.3. Interpreter, Compiler	1.0. Study of different interpreter 2.0. Classifying the interpreters and compilers
2.0. Basic Programming 2.1. Algorithm 2.2. Flow charts & Data flow diagrams 2.3. Different DFD symbols 2.4. Use & application of DFD 2.5. Constants, Variables & expressions 2.6. Operators: Arithmetic, Logical, Relational in general 2.7. Application of different operators with examples	1.0. Drawing flow charts for simple programs/problems 2.0. Simple DFDs for various problem solving 3.0. Expression building for different problems
3.0. Introduction to QBasic 3.1. Understand the concept of QBASIC programming 3.2. Getting started with QBASIC 3.3. Input Commands 3.4. Loop commands 3.5 .IF....ELSE...THEN 3.6. Planning a simple program 3.7. Different programs using logical and loop statement	1.0. At least 10 programs using I/O commands 2.0. At least 5 programs using each loop statements. 3.0. At least 5 programs using IF, IF ... Else... THEN statements.

Computer Programming Elements – 2nd year

Theory	Practical
1.0. Data structure 1.1. Data 1.2. Domain 1.3. Data Object 1.4. Data Representation	
2.0 Stack 2.1 push 2.2 pop 2.3 Reverse of string 2.4 LIFO method	Implement operations on stack. Reverse of string using stack.
3.0. Queue 3.1. FIFO method 3.2. Front Rear 3.3 Doubly ended queue 3.4 Examples	Implement operations on queue. Insertion & display elements in queue. Deletion & display elements in queue
4.0 Linked list 4.1 single linked list 4.2 Circular linked list 4.3 Doubly linked list 4.4 First ptr, Next ptr, Prev ptr	Display single linked list. Find out middle elements in list. Find out last elements in list.
5.0 Searching 5.1 Linear search 5.2 Binary search	Searching the elements using linear search. Searching the elements using binary search.
6.0 Sorting 6.1 Bubble sort 6.2 Insertion sort 6.3 Selection sort 6.4 Merge sort 6.5 Radix sort 6.6.Quick sort	Sort the elements using bubble sort. Sort the elements using Radix sort. Sort the elements using Insertion sort. Sort the elements using Selection sort. Sort the elements using Merge sort. Sort the elements using Quick sort.

Text Book:

1. K.R Venugopal 'Mastering C++', Tata Mcgrawhill1997

References:

1. B.Stroustrup 'C++ Programming Language' (3rd Edition). Addison Wesley, 1997
2. B.chandra Narosa 'A Treatise On Object Oriented programming using C++'-
Publications, 1998
3. Herbert Schildt, "The Complete Reference C++", Tata McGraw-Hill, 2001.

Subject Code - 10140003**Computer Networking – 1st year**

Theory	Practical
Detailed Syllabus : 1.0. Introduction to Computer Architecture 1.1. Over view of Computer Architecture 1.2. Different Elements/parts of a Computer system 1.3. Study of Power Supply & its types 1.4. Different type of Processors with their specifications 1.5. Study of different drivers, controller systems 1.6. Assembling of a Computer system.	1. Study of different Input/Output devices 2. Study of different processors
2.0. Introduction to Computer Networking 2.1. Introduction 2.2. Over view & History of Computer Networks 2.3. Features of Computer Networks 2.4. Merits & Demerits of Computer Network	1. Study of over view of Network
3.0. Network theory: 3.1. Types of networks (LAN, MAN, WAN) 3.2. Network Topologies 3.3. Networking Components in detail (Server, Node, NIC, Bridge, Hub, Router, Switch, Cables, Connectorsetc)	1. Study of different network devices
4.0. Computer Networking Architecture 4.1. Introduction to Networking Architecture 4.2. Concept of Peer to Peer networking 4.3. Explanation of diagram with functions of each element 4.4. Merits and demerits of P2P Networking 4.5. Limitations of P2P Networking 4.6. Client/Server based Networking 4.7. Detailed study of Client/Server based networking with diagram 4.8. Merits and demerits of Client/Server based networking model.	1. Study of different network configurations
5.0. Sharing of data across Network 5.1. Introduction to Access methods 5.2. Types of Access methods 5.3. Concept of BDAM, BSAM, QSAM, BPAM, ISAM, VSAM & OAM.	1. Study of different access methods

Computer Networking – 2nd year

Theory	Practical
Detailed Syllabus : 1.0 OSI Model 1.1. Over view of OSI Model 1.2. Physical layer 1.3. Network layer 1.4. session layer 1.5. Application layer 1.6. presentation layer 1.7 Transport layer 1.8 Data link layer	Study of Network installations
2.0. TCP/IP Model 2.1. Study of TCP/IP model 2.2. Merits and demerits of TCP/IP model 2.3. Factors behind its popularity	Configuration of TCP/ip
3.0. Cables 3.1. Coaxial 3.2. Fiber optic 3.3. Twisted pair	Study of different Cables and their parameters/specifications
4.0. Connector BNC Connector D Type Jack connector XLR	Study of BNC connectors and specifications
5.0. Data communication & networking 5.1. Half duplex 5.2. Full duplex 5.3. Synchronous 5.4. Asynchronous	Study of Duplex systems
6.0. Network Configuration 6.1. Installation of a simple p2p Network 6.2. Installation/Initialization of a Switch/Router /Hub 6.3. Cabling of Network 6.4. TCP/IP configuration	Installation of switch Installation of hub Installation of router
7.0. Client/Server architecture 7.1. Study of Client/Server architecture 7.2. Merits and demerits of Client/Server Network 7.3. Limitations 7.4. Configuration of Servers 7.4.1. File server 7.4.2. Print server 7.4.3. Web server 7.5. Network Administrator, Duties of Administrator, File access methods, File sharing restrictions	Installation of IIS

List of Tools, Machinery, Equipments etc. (Course Code – 101401)

Sr. No.	Name Of Item	Quantity (Nos.)
1	Intel core 2 duo or higher processor, 2 GB RAM, Intel Motherboard, 500 GB Hard Disk, 17" Monitor, Keyboard, Mouse, DVD Combo Drive or latest configuration	25+01 (1 Computer for Teacher)
2	Server	01
3	24 port unmanaged switch	02
4	LAPTOP	01
5	LCD Projector	01
6	MODEM	01
7	Dot matrix printer	01
8	Inkjet printer	01
9	Laser printer	01
10	Scanner	01
11	UPS 5 KVA	01
12	Router	01
13	TURBO C	01
14	MS Office latest version	01
15	Antivirus latest version	As required
16	ISDN/Broad Band Internet Connection	01
17	Speaker	01
18	Computer Table	26
19	Chair	26

Text Book:

1. W.Stallings "Data and Computer Communications", 7th Edition, Prentice Hall, 2004

References:

1. Forouzan , "Data Communication & Networking , " 3rd Edition, McGraw Hill, 2003
2. A.S.Tannenbaum,"Computer networks ",4th edition Printice Hall of India
